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Predation of *Leptodactylus macrosternum* (Anura: Leptodactylidae) by the Fringe-lipped bat, *Trachops cirrhosus* (Chiroptera: Phyllostomidae) in southeastern Brazil

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ABSTRACT

Although *Trachops cirrhosus* (Spix, 1823) is known for feeding on frogs, most of the data on its feeding behavior comes from the analysis of stomach contents, remains on roosting sites or experimental feeding in captivity, with few cases observed directly in the field. Here we report *T. cirrhosus* preying upon the frog *Leptodactylus macrosternum* Miranda-Ribeiro, 1926, which is the first record of this bat species preying an anuran in southeastern Brazil, and also the first direct observation of a predation event by *T. cirrhosus* in the wild in this region, contributing to the understanding of its trophic relations.

RESUMO

Embora o morcego *Trachops cirrhosus* seja conhecido por se alimentar de anuros, a maioria das informações sobre seus hábitos alimentares é resultado da análise de conteúdo estomacal, restos encontrados em abrigos ou alimentação experimental em cativeiro, com poucos casos observados diretamente na natureza. Neste trabalho nós reportamos *T. cirrhosus* predando a rã *Leptodactylus macrosternum*, sendo o primeiro registro deste morcego se alimentando de anuros no sudeste do Brasil, e também a primeira observação direta de um evento de predação por *T. cirrhosus* na natureza para esta região, contribuindo, desta forma, para o entendimento das suas relações tróficas.

Trachops cirrhosus (Spix, 1823), popularly known as Fringe-lipped bat, is a medium-sized Phyllostomidae occurring in forest and stream habitats, open savannas and agricultural areas from southern Mexico to southern Brazil (Cramer et al. 2001, Williams & Genoways 2007, Miller et al. 2015). This species is closely related to animalivorous and omnivorous species in the family Phyllostomidae (Baker et al. 2016), and it is easily distinguishable from other bat species due to conical or cylindrical wart-like protuberances on its chin and lips, serrated edge on the noseleaf, and a large pinna (Cramer et al. 2001).

The diet of *T. cirrhosus* has been reported to include insects, fruits and small vertebrates such as birds, lizards, and even other bats (e.g., Peracchi et al. 1982; Bonato & Facure 2000; Rodrigues et al. 2004; Leal et al. 2018). However, the species is mainly known from its ability to catch and feed on frogs, and being capable of using prey-generated acoustic cues to discriminate among poisonous and palatable

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prey (Ryan & Tuttle 1983). Although *T. cirrhosus* includes a wide range of items in its diet, few data are available on its feeding habits and the knowledge of its ecology is still poorly known, especially in Brazil (Rodrigues et al. 2004; Leal et al. 2018). Within this scenario, the goals of this study were to report a new predation event of *T. cirrhosus* upon the anuran *Leptodactylus macrosternum* Miranda-Ribeiro, 1926 in southeastern Brazil, contributing to the understanding of its trophic relations and natural history.

Fieldwork was conducted in July 2017 (dry season) at Fazenda Fortaleza de Santa Terezinha, a livestock farm in the municipality of Jequitai, state of Minas Gerais, southeastern Brazil (17° 10' 44.78" S; 44° 38' 41.80" W). The native vegetation cover in the area is mainly composed of dry forests ("Mata Seca"), and narrow gallery and riparian forests on the banks of rivers and streams within the Cerrado biome (*sensu* IBGE 2004).

On July 11, 2017, we installed six ground-level mist-nets (each net is 12 m long and 3 m high) on a trail within a small fragment of gallery forest along a dry watercourse. One male specimen of *T. cirrhosus* (forearm 61.09 mm, head-body 73 mm, weight 40.13 g) was captured close to the ground (approximately at a height of 1 m), while carrying an already dead and half-eaten frog, identified as *L. macrosternum* (Anura: Leptodactylidae) (Fig. 1A, B). Several individuals of the same frog species were found in the nearby forest where the mist net was placed (Fig. 1C). The individual *T. cirrhosus* was collected under the license IEF 034.012/2016/MG, and all capture and collection procedures followed the CFBio (Conselho Federal de Biologia) and IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis) resolutions. The specimen was deposited at the Coleção de Mamíferos do Centro de Coleções Taxonômicas da Universidade Federal de Minas Gerais (CM-CCT/UFGM) under the catalog number UFGM 6811 and had tissue samples collected.

Most data on the feeding behavior of *T. cirrhosus* comes from stomach content analyses, remains on roosting sites or experimental feeding in captivity, with few cases observed in the field (Cramer et al. 2001; Leal et al. 2018). This is the first direct observation of a predation event by *T. cirrhosus* in the wild in southeastern Brazil and also the first record of this bat species preying an anuran in this region. Other records on the diet of the Fringe-lipped bat in Brazil are restricted to Amazonia (northern Brazil), and the states of Pernambuco (northeastern Brazil) and Rio de Janeiro (southeastern Brazil) (Peracchi et al. 1982; Rodrigues et al. 2004; Rocha et al. 2012; Rocha et al. 2016; Castro & Costa-Campos 2017; Leal et al. 2018). Nonetheless, data from Rio de Janeiro were obtained from captive bats and include items that may not be usual for the species in the wild (e.g., *Mus musculus*). In Brazil, amphibians were reported in the diet of *T. cirrhosus* by Bonato et al. (2004), Rocha et al. (2012), Rocha et al. (2016), Castro & Costa-Campos (2017), and Leal et al. (2018). Particularly, frogs of the genus *Leptodactylus* were reported on the ground of feeding perches of *T. cirrhosus* in northeastern Brazil (Leal et al. 2018) and this is the second record of this genus in the diet of *Trachops*. The consumption we report herein occurred during the dry season when the consumption of amphibians by *T. cirrhosus* would be less expected since these bats use frogs' call to locate its prey, and frog vocal activity peak occur mostly on the rainy season (Duellman & Trueb 1994; Zina & Haddad 2005). Al-



though anurans are cited as common prey of the Fringe-lipped bat, Leal et al. (2018) showed insects are the main item in the diet of *T. cirrhosus*, followed by amphibians. Silva (2007) also reports insects as the most frequent items on fecal samples of *T. cirrhosus*, followed by fruits and small vertebrates. These findings show that, although *T. cirrhosus* may be able to feed on frogs and small vertebrates, it is a generalist predator as other phyllostomines.

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Figure 1. Specimen of *Trachops cirrhosus* (UFMG 6811) captured at Fazenda Fortaleza de Santa Terezinha, Jequi-tai, Minas Gerais state, Brazil (A), predating on *Leptodactylus macrosternum* (B). Live specimen of *Leptodactylus macrosternum* commonly found in the area (C). Scale bar=1cm

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